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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* PARTHO SARKAR and HONGSANG RHO

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Appeal 2009-013107  
Application 10/658,803  
Technology Center 1700

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Decided: November 24, 2009

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Before CATHERINE Q. TIMM, LINDA M. GAUDETTE, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 1-12, the only claims pending in the Application.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

#### STATEMENT OF THE CASE

Independent claims 1 and 12 are illustrative of the subject matter on appeal, and are reproduced from the Claims Appendix to the Appeal Brief:

1. An anode-supported solid oxide fuel cell comprising

(a) an anode support layer comprising a porous ion-conducting structure having pores impregnated with a catalytic and electronically conductive material;

(b) an electrolyte layer in adjacent intimate contact with the anode support layer; and

(c) a cathode layer in adjacent intimate contact with the electrolyte layer.

12. An anode-supported solid oxide fuel cell comprising

(a) an anode support layer comprising an ion-conducting structure with a plurality of vias extending through the thickness of the oxygen ion-conducting structure, at least some of the vias being filled with electronically conductive material;

(b) an anode functional layer in adjacent intimate contact with the anode support layer;

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<sup>1</sup> (See Final Office Action ("Final"), mailed Jun. 5, 2006; Appeal Brief ("Br."), filed Sep. 4, 2007; Examiner's Answer ("Ans."), mailed Oct. 24, 2007, 2 ¶ (7); Examiner's Amendment, mailed Jul. 6, 2006 (cancelling claim 13).)

(c) an electrolyte layer in adjacent intimate contact with the anode functional layer; and

(d) a cathode layer in adjacent intimate contact with the electrolyte layer.

Appellants request review of the following grounds of rejection (Br. 5):

1. claims 1-9<sup>2</sup>, 11, and 12 under 35 U.S.C. § 102(e) as anticipated by Shibata (US 2002/0164523, published Nov. 7, 2002); and

2. claims 7, 8, and 10 under 35 U.S.C. § 103(a) as unpatentable over Shibata in view of Sammes (US 2002/0028367, published Mar. 7, 2002).

#### ISSUE

The dispositive issue for both rejections is the same:

Have Appellants shown reversible error in the Examiner's interpretation of the claim term "ion-conducting structure" (claims 1 and 12) as encompassing Shibata's ceramic alumina body 1 and electrode 10?

We answer this question in the negative.

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<sup>2</sup> Appellants do not identify claims 7 and 8 as subject to this ground of rejection (Br. 5), although the Examiner includes these claims in the statement of the § 102(e) rejection (Final 2; Ans. 3) and corresponding discussion (Final 4-5; Ans. 5-6). We view this as an inadvertent error on the part of Appellants and treat the arguments presented in traversing the obviousness rejection as arguments in support of the separate patentability of claims 7 and 8 with respect to both the § 102(e) and § 103(a) rejections. We note that Appellants have not presented separate arguments in support of the patentability of claim 10. (*See* Br. 10-12.)

### FINDINGS OF FACT

1. Appealed claims 1 and 12 recite “an anode support layer comprising” a porous “ion-conducting structure.” Appellants concede that yttria-stabilized zirconia (“YSZ”) is ion-conducting and “[a] suitable material for the recited anode support layer.” (Br. 7.)

2. Shibata Example 1 illustrates a solid electrolyte type fuel cell (“SOFC”) having a structure that includes a “porous base body 1 and [] battery components (the electrode 10, the solid electrolyte 12 and the electrode 11).” (Shibata, ¶ [0068].) The porous base body 1 includes a ceramic (alumina) body plated with Ni, coated with the electrode 10 (Ni-8% YSZ), the solid electrolyte 12 (8% YSZ) and the electrode 11 (LSC) in a sequence. (Shibata, ¶ [0069].)

3. The Examiner contends that the ion-conducting structure as claimed reads on Shibata’s ceramic (alumina) body 1 plated with Ni and coated with the electrode 10 (Ni-8% YSZ). (Ans. 11-12; Ans. 15, ¶ (10.); *see also*, Ans. 4, last para.)

4. Appellants argue that one of ordinary skill in the art would not understand the claim term “ion-conducting structure” as encompassing Shibata’s ceramic alumina body 1 (Br. 6.) Appellants rely on evidence in Appendices B-E of their Appeal Brief to establish that alumina is an insulator and not suitable for use as an ion conductor in a solid oxide fuel cell. (*See, e.g.*, Br. 7.)

5. The Specification describes the anode support layer as “composed of a solid state yttria-stabilized zirconia (YSZ) structure impregnated with Ni or Ni-containing compounds.” (Spec. 6:16-17.) The Specification further states that “other oxygen ion conducting materials

suitable for SOFC use and having a relatively similar thermal coefficient to the electrolyte, as is known in the art, may be substituted for YSZ.” (Spec. 6:19-22.) For example, “the composition of the porous ion conducting structure may be a mixture of 10-30% Ni, NiO or both, and the balance being yttria-stabilized zirconia (YSZ).” (Spec. 3:26-28.)

#### PRINCIPLES OF LAW

During examination, claim terms must be given their broadest reasonable construction consistent with the Specification. *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007) (“[W]e look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.”).

“‘Comprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.” *In re Crish*, 393 F.3d 1253, 1257 (Fed. Cir. 2004) (quoting *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997)).

#### ANALYSIS

We are in agreement with the Examiner that the broadest reasonable interpretation of the claim term “ion-conducting structure” encompasses Shibata’s ceramic (alumina) body 1 plated with Ni and coated with the electrode 10 (Ni-8% YSZ). Contrary to Appellants’ contention, we find no basis in the language of the claims or the Specification for narrowly construing the “ion-conducting structure” as limited to a single layer, or precluding a coating. In this regard, we note that the use of the term “comprising” following “an anode support layer” opens claims 1 and 12 to include additional elements beyond those specifically named. Further, the

Specification indicates that the materials identified as suitable for the “ion-conducting structure” are merely illustrative. While Appellants have provided evidence to show that alumina (i.e., the material of Shibata’s base body 1) is not suitable for use as an ion conductor, Appellants have not attempted to refute the Examiner’s finding that the combination of Shibata’s ceramic alumina body 1 and electrode 10 meets the limitation of an “ion-conducting structure.” (*See generally*, Br.; *Cf.* Br. 9 (arguing that “Shibata discloses electrodes 10 and 11 to be in intimate contact with the electrolyte [12] and not the base body 1 asserted by the Examiner to correspond to the anode support layer.”)).

Appellants’ arguments in support of patentability of claims 7 and 8 are similarly based on their contention that the claims require a “single anode support layer.” (Br. 11.) These arguments are not persuasive of reversible error on the part of the Examiner in view of our interpretation of the disputed claim language above, and the absence of any limitations in claims 7 and 8 requiring that the anode support layer is a “single layer.”

### CONCLUSION

Appellants have not identified reversible error in the Examiner’s interpretation of the claim term “ion-conducting structure” as encompassing Shibata’s ceramic alumina body 1 and electrode 10. Therefore, we affirm the rejections of claims 1-9, 11, and 12 under 35 U.S.C. § 102(e) as anticipated by Shibata and claims 7, 8, and 10 under 35 U.S.C. § 103(a) as unpatentable over Shibata in view of Sammes.

Appeal 2009-013107  
Application 10/658,803

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

kmm

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